The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1   1. (currently amended) A method for making prioritized recommendations to
2   a customer in the process of filling a market basket for purchase on an Internet
3   commerce site, the method comprising the steps of:
4   generating a matrix of training data;
5   ~~considering~~ determining preferences based on associative and renewal
6   buying history from the training data; and
7   making a prioritized recommendation of items so as to maximize the
8   likelihood that the customer will add to the market basket those items with
9   higher priorities.

1   2. (original) The method of claim 1, wherein the two preferences are
2   estimated separately from the training data and combined in proper
3   proportions to obtain an overall preference for item not yet in the market
4   basket.

1   3. (canceled) A method for making prioritized recommendations to a
2   customer in the process of filling a market basket for purchase on an Internet
3   commerce site, the method comprising the steps of:
4   collecting statistics from training data;
5   precomputing model parameters from the collected statistics; and
6   recommending ordering for a given partial market basket based on the
7   precomputed model parameters.

1   4. (canceled) The method of claim 3, wherein the step of collecting statistics
2   comprises the steps of:

3   (a) for each item j, obtaining n_j a number of baskets with item j purchased;

4   (b) for each item j, obtaining n_j' a number of baskets with j being a sole

5   item purchased;

6   (c) for each pair of items i and j, obtaining a number of market baskets n_{ji}

7   with items j and i purchased together; and

8   (d) for each pair of items i and j, obtaining a number of market baskets

9   n_{ji}' with items i and j being the only two items purchased.

1   5. (canceled) The method of claim 4, wherein the step of precomputing

2 model parameters comprises the steps of:

3   (a) computing $\mathbf{P}(\text{renewal}) = \dfrac{\sum_k n_k'}{\sum_k n_k}$;

4   (b) for each item j, computing $\mathbf{P}(j) = \dfrac{n_j}{\sum_k n_k}$;

5   (c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \dfrac{n_j'}{n_j} + \mathbf{P}(\text{renewal})\left(1 - \dfrac{n_j'}{n_j}\right)$

6   ;

7   (d) for each item j, computing

8     $\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \dfrac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})}$;

9   (e) for each pair of items i and j with $n_{ij} \neq 0$, computing

10     $\mathbf{P}(j \mid i) = \dfrac{n_{ji}}{\sum_k n_{ki}}$;

11   (f)   for each pair of items i and j with $n_{ij} \neq 0$, computing

12 $$P(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + P(\text{renewal})\left(1 - \frac{n_{ji}'}{n_{ji}}\right) \; ; \text{ and}$$

13   (g)   for each pair of items i and j with $n_{ij} \neq 0$, computing

14 $$P'(j \mid \text{asso},i) = P(j \mid i) \times \frac{(1 - P(\text{renewal} \mid j,i))}{(1 - P(\text{renewal} \mid i))} \; .$$

1   6. (canceled) The method of claim 5, wherein given a partial basket $\mathbf{B} = \{i_1,$

2 $i_2, \ldots, i_k\}$ and $\overline{\mathbf{B}}$ is a complementary set of items not in $\mathbf{B}$, the step of

3 recommending ordering for a given partial market basket comprises the steps

4 of:

5   (a)   if $\mathbf{B}$ is empty, sorting items in order of decreasing $P(j \mid \text{renewal})$ and

6   returning this as an item preference ordering;

7   (b)   if $\mathbf{B}$ is non-empty, then

8   (i)   computing $P(\text{renewal} \mid \mathbf{B}) = \min_{i_k \in \mathbf{B}} P(\text{renewal} \mid i_k)$;

9   (ii)   compute a normalization factor $\sum_{k \in \overline{\mathbf{B}}} P'(k \mid \text{renewal})$;

10   (iii)   for each item $j \in \overline{\mathbf{B}}$, computing

11 $$P(j \mid \text{renewal}) = \frac{P'(j \mid \text{renewal})}{\sum_{k \in \overline{\mathbf{B}}} P'(k \mid \text{renewal})} \; ;$$

12   (iv)   computing a normalization factor $\sum_{k \in \overline{\mathbf{B}}} P'(j \mid \text{asso},\mathbf{B})$;

13   (v)   for each item $j \in \overline{\mathbf{B}}$, computing

14 $$P'(j \mid \text{asso},\mathbf{B}) = \max_{i_k \in \mathbf{B}} P(j \mid \text{asso},i_k) \; ;$$

15 (vi) for each item $j \in \overline{\mathbf{B}}$, computing

16
$$P(j \mid asso,\mathbf{B}) = \frac{\mathbf{P}'(j \mid asso,\mathbf{B})}{\displaystyle\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid asso,\mathbf{B})} \; ;$$

17 (vii) for each item $j \in \overline{\mathbf{B}}$, computing

18 $P(j|\mathbf{B}) = P(j \mid asso,\mathbf{B})P(asso \mid \mathbf{B})+P(j \mid renewal,\mathbf{B})P(renewal \mid \mathbf{B})$;

19 and

20 (viii) sorting items in order of decreasing $P(j \mid \mathbf{B})$ and returning this

21 as an item preference ordering.

1 7. (canceled) The method of claim 6, wherein the step of sorting comprises

2 the step of using a final probability obtained for each item, $P(j \mid \mathbf{B})$, of a

3 customer buying the item to maximize profit by recommendation.

1 8. (canceled) The method of claim 7, wherein the step of using a final

2 probability of an item to maximize profit comprises the steps of:

3 assigning a profit amount, $\$_j$, to each item;

4 computing $P(j \mid \mathbf{B})\$_j$ for each item; and

5 ranking recommendations based on the computation of $P(j \mid \mathbf{B})\$_j$ for

6 each item.

1 9. (new) A method for making prioritized recommendations to a customer in

2 the process of filling a market basket for purchase on an Internet commerce

3 site, the method comprising the steps of:

4 collecting statistics on preferences for associative and renewal buying

5 from training data;

6 precomputing model parameters from the collected statistics; and

7 recommending ordering for a given partial market basket based on the

8 precomputed model parameters.

1   10. (new) The method of claim 9, wherein the step of collecting statistics
2   comprises the steps of:

3   (a) for each item j, obtaining n_j a number of baskets with item j purchased;

4   (b) for each item j, obtaining n_j' a number of baskets with j being a sole

5   item purchased;

6   (c) for each pair of items i and j, obtaining a number of market baskets n_{ji}

7   with items j and i purchased together; and

8   (d) for each pair of items i and j, obtaining a number of market baskets

9   n_{ji}' with items i and j being the only two items purchased.

1   11. (new) The method of claim 10, wherein the step of precomputing model
2   parameters comprises the steps of:

3   (a) computing $\mathbf{P}(\text{renewal}) = \dfrac{\sum\limits_k n_k'}{\sum\limits_k n_k}$;

4   (b) for each item j, computing $\mathbf{P}(j) = \dfrac{n_j}{\sum\limits_k n_k}$;

5   (c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \dfrac{n_j'}{n_j} + \mathbf{P}(\text{renewal})\left(1 - \dfrac{n_j'}{n_j}\right)$

6   ;

7   (d) for each item j, computing

8            $\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \dfrac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})}$;

9   (e) for each pair of items i and j with $n_{ij} \neq 0$, computing

10          $\mathbf{P}(j \mid i) = \dfrac{n_{ji}}{\sum\limits_k n_{ki}}$;

11   (f)   for each pair of items i and j with $n_{ij} \neq 0$, computing

12

$$P(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + P(\text{renewal})\left(1 - \frac{n_{ji}'}{n_{ji}}\right) \text{; and}$$

13   (g)   for each pair of items i and j with $n_{ij} \neq 0$, computing

14

$$P'(j \mid \text{asso},i) = P(j \mid i) \times \frac{(1 - P(\text{renewal} \mid j,i))}{(1 - P(\text{renewal} \mid i))} \cdot$$

1   12. (new) The method of claim 11, wherein given a partial basket $\mathbf{B} = \{i_1, i_2, \ldots$

2      $\ldots, i_k\}$ and $\overline{\mathbf{B}}$ is a complementary set of items not in $\mathbf{B}$, the step of

3   recommending ordering for a given partial market basket comprises the steps

4   of:

5   (a)   if $\mathbf{B}$ is empty, sorting items in order of decreasing $P(j \mid \text{renewal})$ and

6   returning this as an item preference ordering;

7   (b)   if $\mathbf{B}$ is non-empty, then

8   (i)   computing $P(\text{renewal} \mid \mathbf{B}) = \min_{i_k \in \mathbf{B}} P(\text{renewal} \mid i_k)$;

9   (ii)   compute a normalization factor $\sum\limits_{k \in \overline{\mathbf{B}}} P'(k \mid \text{renewal})$;

10   (iii)   for each item $j \in \overline{\mathbf{B}}$, computing

11

$$P(j \mid \text{renewal}) = \frac{P'(j \mid \text{renewal})}{\sum\limits_{k \in \overline{\mathbf{B}}} P'(k \mid \text{renewal})} ;$$

12   (iv)   computing a normalization factor $\sum\limits_{k \in \overline{\mathbf{B}}} P'(j \mid \text{asso},\mathbf{B})$;

13   (v)   for each item $j \in \overline{\mathbf{B}}$, computing

14              $P'(j \mid \text{asso},\mathbf{B}) = \max_{i_k \in \mathbf{B}} P(j \mid \text{asso},i_k)$;

15   (vi)   for each item $j \in \overline{\mathbf{B}}$, computing

16
$$P(j \mid \text{asso},\mathbf{B}) = \frac{\mathbf{P'}(j \mid \text{asso},\mathbf{B})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P'}(k \mid \text{asso},\mathbf{B})} \; ;$$

17   (vii)   for each item $j \in \overline{\mathbf{B}}$, computing

18                $P(j|\mathbf{B}) = P(j \mid \text{asso},\mathbf{B})P(\text{asso} \mid \mathbf{B}) + P(j \mid \text{renewal},\mathbf{B})P(\text{renewal} \mid \mathbf{B})$;

19   and

20   (viii) sorting items in order of decreasing $P(j \mid \mathbf{B})$ and returning this

21   as an item preference ordering.

1   13. (new) The method of claim 12, wherein the step of sorting comprises the

2   step of using a final probability obtained for each item, $P(j \mid \mathbf{B})$, of a customer

3   buying the item to maximize profit by recommendation.

1   14. (new) The method of claim 13, wherein the step of using a final

2   probability of an item to maximize profit comprises the steps of:

3   assigning a profit amount, $\$_j$, to each item;

4   computing $P(j \mid \mathbf{B})\$_j$ for each item; and

5   ranking recommendations based on the computation of $P(j \mid \mathbf{B})\$_j$ for

6   each item.